PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	FOR FURTHER ACTION	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
PHD 99.028WO		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/EP 00/ 02213	10/03/2000	11/03/1999
Applicant		
KONINKLIJKE PHILIPS ELECTRONICS N.V. et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**

   a. With regard to the **language,** the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

   [ ] the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

   b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

   [ ] contained in the international application in written form.

   [ ] filed together with the international application in computer readable form.

   [ ] furnished subsequently to this Authority in written form.

   [ ] furnished subsequently to this Authority in computer readble form.

   [ ] the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

   [ ] the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. [ ] **Certain claims were found unsearchable** (See Box I).

3. [ ] **Unity of invention is lacking** (see Box II).

4. With regard to the **title,**

   [X] the text is approved as submitted by the applicant.

   [ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**

   [X] the text is approved as submitted by the applicant.

   [ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. 1

   [X] as suggested by the applicant.

   [ ] because the applicant failed to suggest a figure.

   [ ] because this figure better characterizes the invention.

   [ ] None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 00/02213

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G11B17/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G11B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 682 320 A (D ALAYER DE COSTEMORE D ARC ST) 21 July 1987 (1987-07-21) abstract; figures 1,2 column 2, line 37 -column 4, line 22	1-4
P,A	DE 198 54 922 A (TANASHIN DENKI CO) 2 June 1999 (1999-06-02) abstract; figures 2,8-16 column 4, line 55 -column 7, line 50 column 10, line 56 -column 13, line 43	1-4
A	US 4 627 042 A (HARA NOBUYUKI) 2 December 1986 (1986-12-02) abstract; figures 2,5,9,10 column 3, line 10 - line 58 column 9, line 1 -column 10, line 6	1-4

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
19 June 2000	27/06/2000

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Pariset, N

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Form PCT/ISA/210 (second sheet) (July 1992)

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
P,A	EP 0 944 073 A (ALPS ELECTRIC CO LTD) 22 September 1999 (1999-09-22) abstract; figures 2A,2B,5,6 column 6, line 34 -column 7, line 29 column 11, line 20 -column 13, line 21 ---	1-4
A	US 4 574 372 A (D ALAYER DE COSTEMORE D ARC ST) 4 March 1986 (1986-03-04) the whole document ---	1
A	EP 0 742 558 A (PHILIPS PATENTVERWALTUNG ;PHILIPS ELECTRONICS NV (NL)) 13 November 1996 (1996-11-13) cited in the application the whole document -----	1-4

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/EP 00/02213

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4682320 A	21-07-1987	BE 901937 A	01-07-1985
		DE 3608662 A	18-09-1986
		FR 2579002 A	19-09-1986
		GB 2172423 A,B	17-09-1986
		IT 1189183 B	28-01-1988
		JP 61210556 A	18-09-1986
DE 19854922 A	02-06-1999	JP 11162063 A	18-06-1999
		CN 1221182 A	30-06-1999
US 4627042 A	02-12-1986	JP 1710884 C	11-11-1992
		JP 3076549 B	05-12-1991
		JP 59121649 A	13-07-1984
		JP 1710885 C	11-11-1992
		JP 3076550 B	05-12-1991
		JP 59121650 A	13-07-1984
		JP 59121651 A	13-07-1984
		JP 59121652 A	13-07-1984
		AT 382257 B	10-02-1987
		AT 453683 A	15-06-1986
		CA 1204859 A	20-05-1986
		DE 3346483 A	28-06-1984
		FR 2538597 A	29-06-1984
		GB 2133202 A,B	18-07-1984
		IT 1206336 B	14-04-1989
		KR 9103045 B	17-05-1991
		KR 9103046 B	17-05-1991
		KR 9103047 B	17-05-1991
		KR 9103048 B	17-05-1991
EP 0944073 A	22-09-1999	JP 11265542 A	28-09-1999
US 4574372 A	04-03-1986	BE 895638 A	16-05-1983
		BE 897175 A	17-10-1983
		DE 3401622 A	19-07-1984
		FR 2539543 A	20-07-1984
		GB 2134692 A,B	15-08-1984
		IT 1173504 B	24-06-1987
		JP 59188870 A	26-10-1984
EP 0742558 A	13-11-1996	DE 19516733 A	07-11-1996
		CN 1146599 A	02-04-1997
		HU 9601189 A	28-02-1997
		JP 8339599 A	24-12-1996

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of | Atty. Docket

NORBERT KUNZE ET AL | PHD 99,028

Int'l Application No.: IBPCT/EP00/02213

Filed: CONCURRENTLY

Title: ELECTRONIC DEVICE

Commissioner for Patents
Washington, D.C. 20231

CITATION OF RELATED CASES

Sir:

Attached is a report which was made by the assignee of the above-identified patent application.

The United States patent applications and issued patents identified in this report may be relevant to the examination of the above-identified patent application inasmuch as they have been identified by an automated search of the assignee's patent portfolio files as having common inventors with and/or subject matter which is classified by the assignee in the same technological field as the above-identified patent application. However, citation of this report is neither an admission that any document noted therein is prior art to the above-identified patent application nor a waiver of the confidential status of any listed patent application under 35 U.S.C. 122.

Respectfully submitted,

By _____
Michael E. Marion, Reg. No. 32,266
Attorney
(914) 333-9641

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Related Cases/Technology Report for PHD 99028

09/674670

52[illegible] Rec'd PCT/PTO 02 NOV 2000

KUNZE, NORBERT
MULLER, STEFAN

Docket No.: PHD 99028
Patent No.:
OS Codes : RO 0442
Title : ELECTRONIC DEVICE.
Attorney: EASON
Serial No.:

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Common Inventors

KUNZE, NORBERT

Docket No.: PHD 84090
Patent No.: 4661866
OS Codes : AEA412
Title : SWITCHING MECHANISM FOR THE TAPE DECK OF A CASSETTE APPARATUS.
Attorney: TREACY
Serial No.: __/741054

KUNZE, NORBERT

Docket No.: PHD 85067
Patent No.: 4750066
OS Codes : AEA412
Title : GROUNDING FOR MAGNETIC HEAD UNIT IN A PLASTIC
Attorney: TIEGERMAN
Serial No.: __/864168

KUNZE, NORBERT

Docket No.: PHD 85068
Patent No.:
OS Codes : AEA412
Title : MAGNETIC-TAPE-CASSETTE APPARATUS COMPRISING TWO
Attorney: TREACY
Serial No.: __/862843

KUNZE, NORBERT

Docket No.: PHD 85068A
Patent No.: 4825322
OS Codes : AEA412
Title : MAGNETIC-TAPE-CASSETTE APPARATUS WITH TWO-BUTTON OF THREE FUNCTIONS.
Attorney: TREACY
Serial No.: __/211069

KUNZE, NORBERT

Docket No.: PHD 85163
Patent No.: 4827785
OS Codes : AEA412
Title : APPARATUS HAVING AT LEAST TWO CONTROL BARS WITH LATCHING ARRANGEMENTS.
Attorney: TREACY
Serial No.: __/922580

KUNZE, NORBERT

Docket No.: PHD 85163R
Patent No.: RE33950
OS Codes : AEA412
Title : APPARATUS HAVING AT LEAST TWO CONTROL BARS WITH LATCHING ARRANGEMENTS.
Attorney: TREACY
Serial No.: __/597612

KUNZE, NORBERT

Docket No.: PHD 86168
Patent No.:
OS Codes : AEA412
Title : SWITCHING MECHANISM FOR A MAGNETIC-TAPE-CASSETTE
Attorney: WIEGHAUS
Serial No.: __/116608

KUNZE, NORBERT

Docket No.: PHD 87103
Patent No.: 4945431
OS Codes : AEA412
Title : MAGNETIC TAPE CASSETTE DEVICE.
Attorney: WIEGHAUS
Serial No.: __/194764

KUNZE, NORBERT

Docket No.: PHD 88073
Patent No.: 4962438
OS Codes : AEA410 AEA402
Title : MAGNETIC HEAD MOUNTING PLATE WITH TAPE MOVEMENT SURFACE.
Attorney: TIEGERMAN
Serial No.: __/336193

KUNZE, NORBERT

Docket No.: PHD 88084
Patent No.:
OS Codes : AEA412
Title : MAGNETIC-TAPE-CASSETTE APPARATUS.
Attorney: MAYER
Serial No.: 07/343982

KUNZE, NORBERT

Docket No.: PHD 88084A
Patent No.: 5179481
OS Codes : AEA412
Title : MAGNETIC-TAPE-CASSETTE APPARATUS.
Attorney: WIEGHAUS
Serial No.: 07/727397

KUNZE, NORBERT

Docket No.: PHD 88111
Patent No.: 5019928
OS Codes : AEA412
Title : MAGNETIC-TAPE-CASSETTE APPARATUS COMPRISING A LOAD EJECT MECHANISM.
Attorney: TIEGERMAN
Serial No.: __/360643

KUNZE, NORBERT

Docket No.: PHD 88134
Patent No.: 5027236
OS Codes : AEA412
Title : MAGNETIC TAPE CASSETTE APPARATUS HAVING A WITH SPRING ARM.
Attorney: TIEGERMAN
Serial No.: __/381568

KUNZE, NORBERT

Docket No.: PHD 88153
Patent No.: 5036414
OS Codes : AEA412
Title : MAGNETIC TAPE CASSETTE APPARATUS HAVING MECHANISM WITH SPRING-BIASED COMPONENTS.
Attorney: TIEGERMAN
Serial No.: __/380183

KUNZE, NORBERT

Docket No.: PHD 88155
Patent No.: 5023742
OS Codes : AEA412
Title : MAGNETIC-TAPE-CASSETTE APPARATUS COMPRISING A PLAYING MAGNETIC-TAPE-CASSETTES.

Attorney: TIEGERMAN
Serial No.: __/378553

KUNZE, NORBERT

Docket No.: PHD 89194
Patent No.:
OS Codes : AEA412
Title : MAGNETIC-TAPE-CASSETTE APPARATUS COMPRISING A OPERABLE CASSETTE DRIVE.

Attorney: WIEGHAUS
Serial No.: 07/605894

KUNZE, NORBERT

Docket No.: PHD 89194A
Patent No.: 5198954
OS Codes : AEA412
Title : MAGNETIC-TAPE-CASSETTE APPARATUS COMPRISING A OPERABLE CASSETTE DRIVE.

Attorney: WIEGHAUS
Serial No.: 07/908510

KUNZE, NORBERT
WEBER, GEORG

Docket No.: PHD 89200
Patent No.: 5198943
OS Codes : AEA412
Title : MAGNETIC-TAPE-CASSETTE APPARATUS COMPRISING A MAGNETIC-TAPE CASSETTES (REVERSING MECHANISM).

Attorney: WIEGHAUS
Serial No.: 07/614409

KUNZE, NORBERT
WEBER, GEORG

Docket No.: PHD 90178
Patent No.:
OS Codes : AEA412
Title : MAGNETIC-TAPE CASSETTE APPARATUS COMPRISING A MAGNETIC TAPE CASSETTES.

Attorney: WIEGHAUS
Serial No.: 07/614327

KUNZE, NORBERT
WEBER, GEORG

Docket No.: PHD 90178A
Patent No.: 5257150
OS Codes : AEA412
Title : MAGNETIC TAPE CASSETTE APPARATUS HAVING A MEMBER FOR SWITCHING TAPE TRANSPORT DIRECTION.

Attorney: WIEGHAUS
Serial No.: 07/945423

GUMBERT, HANS
KUNZE, NORBERT
WEBER, GEORG

Docket No.: PHD 91066
Patent No.: 5295405
OS Codes : AEA400
Title : DEVICE HAVING A PLATE WITH MULTIPLE COOPERATING INJECTION MOLDED THEREON.

Attorney: WIEGHAUS
Serial No.: 07/878653

KUNZE, NORBERT
WEBER, GEORG

Docket No.: PHD 91069
Patent No.: 5285336
OS Codes : AEA412
Title : MAGNETIC-TAPE-CASSETTE APPARATUS.

Attorney: WIEGHAUS
Serial No.: 07/724557

KUNZE, NORBERT
WEBER, GEORG
FALLENBECK, WOLFGANG
KAMMLER, GEORG

Docket No.: PHD 91126
Patent No.:
OS Codes : AEA462 CO0424
Title : METHOD OF MANUFACTURING A PLAIN BEARING FOR A FUNCTIONAL PART, DEVICE FOR CARRYING OUT THIS

Attorney: WIEGHAUS
Serial No.: 07/939272

KUNZE, NORBERT
WEBER, GEORG
FALLENBECK, WOLFGANG
KAMMLER, GEORG

Docket No.: PHD 91126A
Patent No.: 5596805
OS Codes : AEA462 CO0424
Title : METHOD OF MANUFACTURING A PLAIN BEARING FOR A FUNCTIONAL PART OF SYNTHETIC RESIN MATERIAL,

Attorney: WIEGHAUS
Serial No.: 08/442076

KUNZE, NORBERT
WEBER, GEORG

Docket No.: PHD 91129
Patent No.: 5375789
OS Codes : AEA412
Title : MAGNETIC-TAPE CASSETTE APPARATUS COMPRISING A MAGNETIC-TAPE CASSETTES (REEL-DRIVE MECHANISM

Attorney: BOTJER
Serial No.: 07/941592

KUNZE, NORBERT
WEBER, GEORG

Docket No.: PHD 91132
Patent No.: 5351157
OS Codes : AEA412
Title : MAGNETIC-TAPE CASSETTE APPARATUS COMPRISING A SUPPORT ACTUATION).

Attorney: WIEGHAUS
Serial No.: 07/941477

KUNZE, NORBERT
WEBER, GEORG

Docket No.: PHD 91133
Patent No.: 5346156
OS Codes : AEA412
Title : MAGNETIC-TAPE CASSETTE APPARATUS COMPRISING A MAGNETIC-TAPE CASSETTES (REVERSING MECHANISM).

Attorney: WIEGHAUS
Serial No.: 07/941465

KUNZE, NORBERT
MULLER, DIETER

Docket No.: PHD 92115
Patent No.: 5450275
OS Codes : AEA412
Title : MAGNETIC-TAPE CASSETTE APPARATUS COMPRISING AN DECK (PRESSURE-ROLLER BRACKET ACTUATION).

Attorney: WIEGHAUS
Serial No.: 08/113547

KUNZE, NORBERT
MULLER, DIETER

Docket No.: PHD 92116
Patent No.:
OS Codes : AEA412
Title : MAGNETIC-TAPE CASSETTE APPARATUS COMPRISING A MAGNETIC-TAPE CASSETTES (COUPLING SLIDE).

Attorney: WIEGHAUS
Serial No.: 08/113545

KUNZE, NORBERT
MULLER, DIETER

Docket No.: PHD 92116A
Patent No.:
OS Codes : AEA412
Title : MAGNETIC-TAPE CASSETTE APPARATUS INCLUDING ARRANGEMENT FOR FAST WINDING OPERATIONS.

Attorney: WIEGHAUS
Serial No.: 08/439711

KUNZE, NORBERT
MULLER, DIETER

Docket No.: PHD 92120
Patent No.:
OS Codes : AEA412
Title : MAGNETIC-TAPE-CASSETTE APPARATUS WITH A DECK FOR TAPE CASSETTES (LOADING MECHANISM).

Attorney: WIEGHAUS
Serial No.: 08/111811

KUNZE, NORBERT
MULLER, DIETER

Docket No.: PHD 92120A
Patent No.:
OS Codes : AEA412
Title : MAGNETIC-TAPE-CASSETTE APPARATUS WITH A DECK FOR TAPE CASSETTES (LOADING MECHANISM).

Attorney: WIEGHAUS
Serial No.: 08/394920

KUNZE, NORBERT
MULLER, DIETER

Docket No.: PHD 93011
Patent No.:
OS Codes : AEA412
Title : DECK IN AN ELECTROMECHANICAL INFORMATION

Attorney: WIEGHAUS
Serial No.: 08/182258

KUNZE, NORBERT
MULLER, DIETER

Docket No.: PHD 93165
Patent No.: 5610787
OS Codes : AEA412
Title : MAGNETIC-TAPE APPARATUS WITH TAPE EDGE GUIDES FOR TAPE EDGE WEAR.

Attorney: MCDERMOTT
Serial No.: 08/330646

KAMMLER, GEORG
MULLER, STEFAN

Docket No.: PHD 93174
Patent No.: 5575433
OS Codes : AEA412
Title : TECHNICAL DEVICE, PARTICULARLY ELECTROMECHANICAL MOVING INFORMATION CARRIERS AND METHOD OF

Attorney: MCDERMOTT
Serial No.: 08/329572

KAMMLER, GEORG
MULLER, STEFAN

Docket No.: PHD 93174A
Patent No.: 5716575
OS Codes : AEA412
Title : METHOD OF PRODUCING A MOVABLE PLASTIC PART ON A

Attorney: MCDERMOTT
Serial No.: 08/710623

KUNZE, NORBERT
MULLER, DIETER

Docket No.: PHD 94003
Patent No.: 5475547
OS Codes : AEA412
Title : FLYWHEEL FOR A MAGNETIC-TAPE-CASSETTE APPARATUS.

Attorney: WIEGHAUS
Serial No.: 08/268690

KUNZE, NORBERT
MULLER, DIETER
GIELKENS, MARC

Docket No.: PHD 94015
Patent No.:
OS Codes : AEA412
Title : MAGNETIC TAPE CASSETTE APPARATUS FOR REVERSIBLE MAGNETIC TAPE CASSETTES.

Attorney: WIEGHAUS
Serial No.: 08/378699

KUNZE, NORBERT
MULLER, DIETER
GIELKENS, MARC

Docket No.: PHD 94015A
Patent No.: 5669570
OS Codes : AEA412
Title : MAGNETIC TAPE CASSETTE APPARATUS FOR REVERSIBLE MAGNETIC TAPE CASSETTES.

Attorney: WIEGHAUS
Serial No.: 08/744500

KUNZE, NORBERT
MULLER, DIETER

Docket No.: PHD 94016
Patent No.: 5583719
OS Codes : AEA400
Title : MAGNETIC HEAD MOUNTING ARRANGEMENT FOR A TAPE CASSETTE APPARATUS.

Attorney: WIEGHAUS
Serial No.: 08/385493

KUNZE, NORBERT
MULLER, DIETER
GIELKENS, MARC

Docket No.: PHD 94094
Patent No.: 5647549
OS Codes : AEA460
Title : MAGNETIC TAPE CASSETTE APPARATUS WITH DRIVE.

Attorney: MCDERMOTT
Serial No.: 08/505413

KUNZE, NORBERT

Docket No.: PHD 95048
Patent No.: 5798898
OS Codes : MK1070
Title : MAGNETIC HEAD WITH A TAPE-GUIDE DEVICE.

Attorney: FOX
Serial No.: 08/646827

KUNZE, NORBERT
MULLER, DIETER

Docket No.: PHD 95051
Patent No.: 5743015
OS Codes : AEA460
Title : METHOD OF SECURING A SHAFT-BEARING BUSH OF A MATERIAL IN A HOLE IN A METAL MOUNTING PLATE.

Attorney: BARTLETT
Serial No.: 08/655531

KUNZE, NORBERT
MULLER, DIETER

Docket No.: PHD 95051A
Patent No.:
OS Codes : AEA460
Title : METHOD OF SECURING A SHAFT-BEARING BUSH OF A MATERIAL IN A HOLE IN A METAL MOUNTING PLATE.

Attorney: BARTLETT
Serial No.: 08/946485

KUNZE, NORBERT
MULLER, DIETER

Docket No.: PHD 95051B
Patent No.:
OS Codes : AEA460
Title : METHOD OF SECURING A SHAFT-BEARING BUSH OF A MATERIAL IN A HOLE IN A METAL MOUNTING PLATE.

Attorney: BARTLETT
Serial No.: 08/946485

KUNZE, NORBERT
MULLER, DIETER

Docket No.: PHD 95051C
Patent No.:
OS Codes : AEA460
Title : METHOD OF SECURING A SHAFT-BEARING BUSH OF A MATERIAL IN A HOLE IN A METAL MOUNTING PLATE.

Attorney: BARTLETT
Serial No.: 08/946485

KUNZE, NORBERT
MULLER, DIETER

Docket No.: PHD 95091
Patent No.: 5816521
OS Codes : AEA460
Title : MAGNETIC-TAPE-CASSETTE APPARATUS HAVING A DECK TAPE CASSETTES.

Attorney: RUBIN
Serial No.: 08/706116

KUNZE, NORBERT
KOCH, STEFAN

Docket No.: PHD 96006
Patent No.:
OS Codes : AEA160 AEA460
Title : MAGNETIC-TAPE-CASSETTE APPARATUS.

Attorney: BELK
Serial No.: 08/788719

KUNZE, NORBERT
KOCH, STEFAN

Docket No.: PHD 96006A
Patent No.: 5995331
OS Codes : AEA160 AEA460
Title : MAGNETIC-TAPE-CASSETTE APPARATUS.

Attorney: BELK
Serial No.: 08/788719

KUNZE, NORBERT
KOCH, STEFAN

Docket No.: PHD 96007
Patent No.: 5742447
OS Codes : AEA160 AEA460
Title : AUTO-REVERSE TAPE DECK COMPRISING A SWITCHING

Attorney: BELK
Serial No.: 08/788720

KUNZE, NORBERT
KOCH, STEFAN

Docket No.: PHD 96008
Patent No.: 5765741
OS Codes : AEA160 AEA460
Title : AUTO-REVERSE TAPE DECK COMPRISING A SWITCHING

Attorney: BELK
Serial No.: 08/788735

KUNZE, NORBERT
KOCH, STEFAN

Docket No.: PHD 96033
Patent No.:
OS Codes : AEA460
Title : LOADING MECHANISM.

Attorney: RUBIN
Serial No.: 08/813419

KUNZE, NORBERT
KOCH, STEFAN

Docket No.: PHD 96033A
Patent No.: 5953179
OS Codes : AEA460
Title : LOADING MECHANISM.

Attorney: RUBIN
Serial No.: 08/813419

KUNZE, NORBERT

Docket No.: PHD 96114
Patent No.:
OS Codes : AEA462 AEA402
Title : PULLEY.

Attorney: RUBIN
Serial No.: 08/899946

KUNZE, NORBERT

Docket No.: PHD 96114A
Patent No.: 5954605
OS Codes : AEA462 AEA402
Title : PULLEY.

Attorney: RUBIN
Serial No.: 08/899946

MEYER, RAIMUND
MÜLLER, STEFAN
GERSTACKER, WOLFGANG
HUBER, JOHANNES

Docket No.: PHD 96184 **Attorney:** HALAJIAN
Patent No.: 6118816 **Serial No.:** 08/968955
OS Codes : 1205RF CM2351
Title : DIGITAL TRANSMISSION SYSTEM WITH A TRELLIS-BASED, STATE ESTIMATION METHOD.

KUNZE, NORBERT
KOCH, STEFAN

Docket No.: PHD 97046 **Attorney:** TREACY
Patent No.: 6091585 **Serial No.:** 09/054107
OS Codes : AEA462
Title : MAGNETIC-TAPE-CASSETTE APPARATUS.

KUNZE, NORBERT
KOCH, STEFAN
RUMPF, HORST

Docket No.: PHD 97052 **Attorney:** GOODMAN
Patent No.: 5901915 **Serial No.:** 09/065793
OS Codes : AEA462
Title : MAGNETIC-TAPE-CASSETTE APPARATUS.

MULLER, STEFAN
RUMPF, HORST

Docket No.: PHD 97115 **Attorney:** GOODMAN
Patent No.: **Serial No.:** 09/141640
OS Codes : HV6400 HV6300
Title : LOADING MECHANISM FOR LOADING AND/OR UNLOADING AT MEMORY CARD INTO/FROM AN ELECTRONIC APPARATUS.

HOPF, CHRISTIAN
KUNZE, NORBERT
MULLER, STEFAN
RUMPF, HORST

Docket No.: PHD 98096 **Attorney:** TREACY
Patent No.: **Serial No.:** 09/377360
OS Codes : RO0449
Title : LIQUID-FILLED DAMPER FOR A SHOCK-SENSITIVE METHOD OF MANUFACTURING SAID DAMPER.

HOPF, CHRISTIAN
KUNZE, NORBERT
MULLER, STEFAN
RUMPF, HORST

Docket No.: PHD 98171 **Attorney:** BIREN
Patent No.: **Serial No.:** 09/460932
OS Codes : RO0442
Title : ELECTRONIC APPARATUS.

HOPF, CHRISTIAN
KUNZE, NORBERT
MULLER, STEFAN
RUMPF, HORST

Docket No.: PHD 98172 **Attorney:** BIREN
Patent No.: **Serial No.:** 09/464001
OS Codes : RO0442 RO0441
Title : CHANGER APPARATUS FOR INFORMATION DISCS.

NUNZE, NORBERT
MULLER, STEFAN

Docket No.: PHD 99025 **Attorney:** EASON
Patent No.: **Serial No.:**
OS Codes : RO 0441
Title : CHANGER DEVICE FOR DISC-SHAPED DATA CARRIERS.

KUNZE, NORBERT
MULLER, STEFAN

Docket No.: PHD 99026 **Attorney:** EASON
Patent No.: **Serial No.:**
OS Codes : RO 0442
Title : ELECTRONIC DEVICE.

KUNZE, NORBERT
MULLER, STEFAN

Docket No.: PHD 99027
Patent No.:
OS Codes : RO 0443
Title : CHANGING GEAR.

Attorney: EASON
Serial No.:

KUNZE, NORBERT
REBER, JORG
MULLER, STEFAN

Docket No.: PHD 99029
Patent No.:
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Title : ELECTRONIC DEVICE.

Attorney: EASON
Serial No.:

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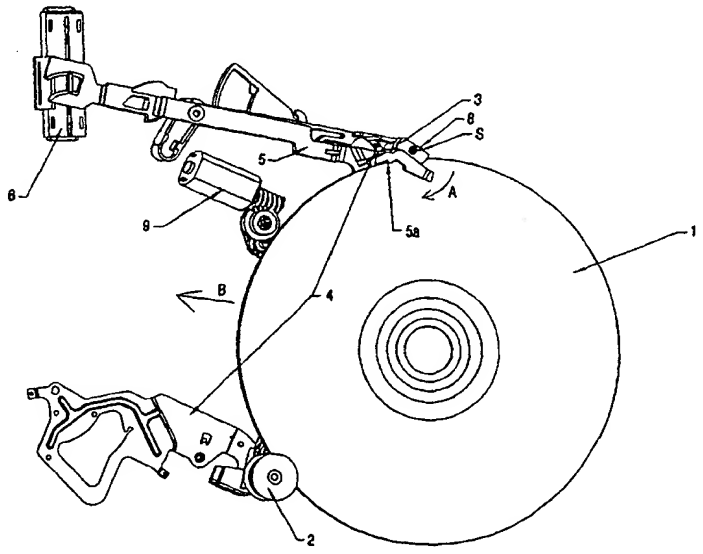

(57) Abstract

The invention relates to a device for reading information stored on an information plate (1) and/or for writing information on an information plate (1), comprising a loading mechanism for loading and unloading the information plate (1). The information is characterized in that the loading mechanism comprises at least one movable scanning lever (5) for detecting the position of the information plate (1), which lever is designed for making contact with the plate edge of the information plate (1), and in that a position sensor is provided for supplying position information on the position of the information plate (1) in dependence on the position of the scanning lever (5).

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Electronic device.

The invention relates to a device for reading information stored on an information plate and/or writing information on an information plate, comprising a loading mechanism for loading and unloading the information plate.

The term information plate is understood to refer to disc-shaped data carriers such as, for example, CDs, CD-ROMs, and DVDs.

Such a device is known, for example, from EP 0742558.

Information plate transport processes inside the device are necessary if the information plates are to be played or stored in a stacking unit. It is necessary in particular that the information plate can be taken from an ejection position, in which the information plate can be taken from the device by a user, into a playback unit of the device. Furthermore, the transport to a stacking unit designed for storing the information plates is necessary in changer devices.

It is an object of the invention to provide a device of the kind mentioned in the opening paragraph which renders possible a reliable monitoring and control of the transport of the information plate, in particular during loading and unloading.

According to the invention, this object is achieved in that the device comprises at least one movable scanning lever for detecting the position of the information plate, which lever is designed to contact the plate edge of the information plate, and in that a position sensor is provided for supplying position information on the position of the information plate in dependence on the position of the scanning lever.

It is possible by means of the scanning lever to recognize the position of the information plate electrically throughout the transport of the information plate. This renders possible an optimized monitoring and control of the loading and unloading process as well as of other transport processes of the information plate, thus increasing the functional reliability of the device. Preferably, the scanning lever can be pressed by spring force against the plate edge of the information plate. It bears at least partly on the plate edge of the information plate during the loading and/or unloading process and changes its position during this. This is detected by the position sensor and can be transmitted as position information to a control unit designed for controlling the loading process. In particular, the position information may

be utilized for supplying a start and a stop signal for starting and stopping the loading process.

The position sensors as claimed in claims 2 and 3 are particularly simple, inexpensive, and reliable.

The advantageous embodiment of the invention as defined in claim 4 renders it possible in a simple manner to make the information plate enter the loading mechanism again, if so desired by the user, immediately after an ejection process has ended, without the necessity of removing the information plate first completely from the device. This is often referred to as the push-back function. It is necessary here to generate a trigger signal for the drive motor of the transport gear for starting the loading process. This is preferably done by means of a slight inward push given by the user in the loading direction of the information plate. The roller element is rotated somewhat during this pushing movement.

The prestress of the roller element may be designed to be very small and may be realized, for example, by means of a torsion spring. Accordingly, the user need exert only a very slight force for rotating the roller element against its prestress by pushing against the information plate and thus realizing the required insertion path for generating the trigger signal which starts the loading process. The information plate is inserted in the loading direction, rolling over the roller element, whereby the scanning lever which scans the position of the information plate is deflected. This causes the position sensor to change its code or its resistance, as applicable, and generates the trigger signal for controlling the drive motor of the transport wheel. The pivoting arms are preferably prestressed relative to one another with great prestress forces. The device accordingly has the advantage that the user need not insert the information plate into the device against the comparatively great prestress forces which act between the pivot arms for starting the loading process of the information plate, but only against the substantially smaller prestress force with which the roller element is biased.

An embodiment of the invention is diagrammatically depicted in the sole Figure of the drawing and will be explained in more detail below.

The sole Figure is a plan view of the loading mechanism of a device for reading information stored on information plates and/or writing information on information plates, where an information plate 1 is in an ejection position in which it can be taken from the device.

The loading mechanism comprises a transport wheel 2 which can be driven into rotation about an axis of rotation 2a and which is fastened on a first pivoting lever 4a.

The pivoting lever 4a is rotatably journaled about a pivot axis 4b. A roller element 3 is present, arranged on a second pivoting lever 4c. The second pivoting lever 4c is rotatably journaled about a pivot axis 4d. The roller element 3 is journaled so as to be rotatable about an axis 3a over a certain range in the direction of an arrow A, a spring prestress being applied in the direction of a contact edge 6 against the direction of the arrow A by means of a torsion spring which is not shown in any detail.

The transport wheel 2 and the roller element 3 have respective grooves into which the plate edge of the information plate can be pressed. The first pivoting lever 4a and the second pivoting lever 4c are coupled to one another by means of a lever mechanism, which is not shown in any detail, or are pretensioned with respect to one another by spring force.

Such a loading mechanism is described in detail in the publication EP 0742558, which is expressly deemed to be incorporated into the disclosure of the present application.

To load the information plate 1, the transport wheel 2 is driven into rotation in anti-clockwise direction by a drive motor 9. The rotating transport wheel 2 then exerts a tangential force on the edge of the information plate 1, as a result of which the information plate 1 is transported in the direction of an arrow B so as to be loaded into a loading device, while being supported between the roller element 3 and the transport wheel 2. The pivoting lever 4a is pivoted about the pivot axis 4b and the pivoting lever 4c about the pivot axis 4d. The transport wheel 2 will rotate in clockwise direction for the purpose of unloading, and the information plate 2 is transported against the loading direction B then.

A scanning lever 5 is provided for detecting the position of the information plate 1, which lever is situated above the pivoting lever 4c and is also rotatably journaled about the pivot axis 4d, while being prestressed by spring force in the direction of the information plate 1. The scanning lever 5 has a scanning edge 5a which is pressed against the plate edge of the information plate 1. The scanning lever 5 is accordingly pivoted by the plate edge of the information plate 1 during loading and unloading of the information plate 1. The scanning lever 5 is coupled to a variable resistor 6 at its end opposed to the scanning edge 5a. The variable resistor 6 changes its electrical resistance in dependence on the position of the scanning lever 5 and the information plate 1. This change in resistance is transmitted to a control unit for monitoring and controlling the loading and unloading process of the information plate 1.

The scanning lever 5 may alternatively be journaled in a different manner, for example about a pivot axis other than that of the lever 4c. In addition, the scanning lever may be so

journaled that not only rotary movements, but also translatory movements of the scanning lever are possible.

To start the loading process, the user must bring the information plate 1 into the ejection position depicted in the Figure and push the information plate some distance in the loading direction B. When the information plate 1 is being inserted in the loading direction B, the roller element 3 will rotate in the direction of the arrow A against the spring force of the torsion spring. To keep the forces to be exerted by the user small here, the torsion spring force is chosen to be very small. As a result, the information plate can be inserted into the device over a short insertion distance while lightly rolling over the roller element. The scanning lever 5 scans the position of the information plate 1 during this and is pivoted, whereby the variable resistor 6 changes its resistance, the drive motor 9 is started for driving the transport wheel 2, and the information plate is automatically pulled inwards by the loading mechanism. Such a construction has the advantage that the user must overcome only the small force of the torsion spring prestressing the roller element 3 and not the substantially greater spring force by means of which the pivoting arms 4a and 4c are usually prestressed with reference to one another. This is in particular also advantageous for the so-called push-back function by means of which the user can return an ejected information plate immediately back into the device. Owing to the small prestress force of the rotary roller element 3, a slight tapping in the loading direction B is sufficient for this.

The roller element 3 is pressed against the contact edge 8 against the spring force of the torsion spring both during the further transport of the information plate 1 in the loading direction B and during the transport against the loading direction B (unloading).

CLAIMS:

1. A device for reading information stored on an information plate (1) and/or writing information on an information plate (1), comprising a loading mechanism for loading and unloading the information plate (1), characterized
in that the loading mechanism comprises at least one movable scanning lever (5) for detecting the position of the information plate (1), which lever is designed to contact the plate edge of the information plate (1), and
in that a position sensor is provided for supplying position information on the position of the information plate (1) in dependence on the position of the scanning lever (5).

2. A device as claimed in claim 1, characterized in that the position sensor is constructed as a variable resistor (6), and in that the scanning lever (5) changes the resistance of the variable resistor (6) in dependence on the position of the information plate (1).

3. A device as claimed in claim 1, characterized
in that the position sensor is constructed as an electronic encoder switch, and
in that the scanning lever (5) changes the code of the encoder switch in dependence on the position of the information plate (1).

4. A device as claimed in claim 1, characterized
in that the loading mechanism comprises two guides arranged on pivoting arms (4a, 4c) with grooves for the edge of the information plate (1),
in that one of the guides is constructed as a transport wheel (2) which can be driven into rotation and the other guide as a roller element (3),
in that the pivoting levers (4a, 4c) are coupled to one another,
in that the transport wheel (2) and the roller element (3) can be pressed against the plate edge for the purpose of loading and unloading the information plate (1), and
in that the roller element (3) is journaled so as to be rotatable through an angular range and is prestressed against a stop under spring force.

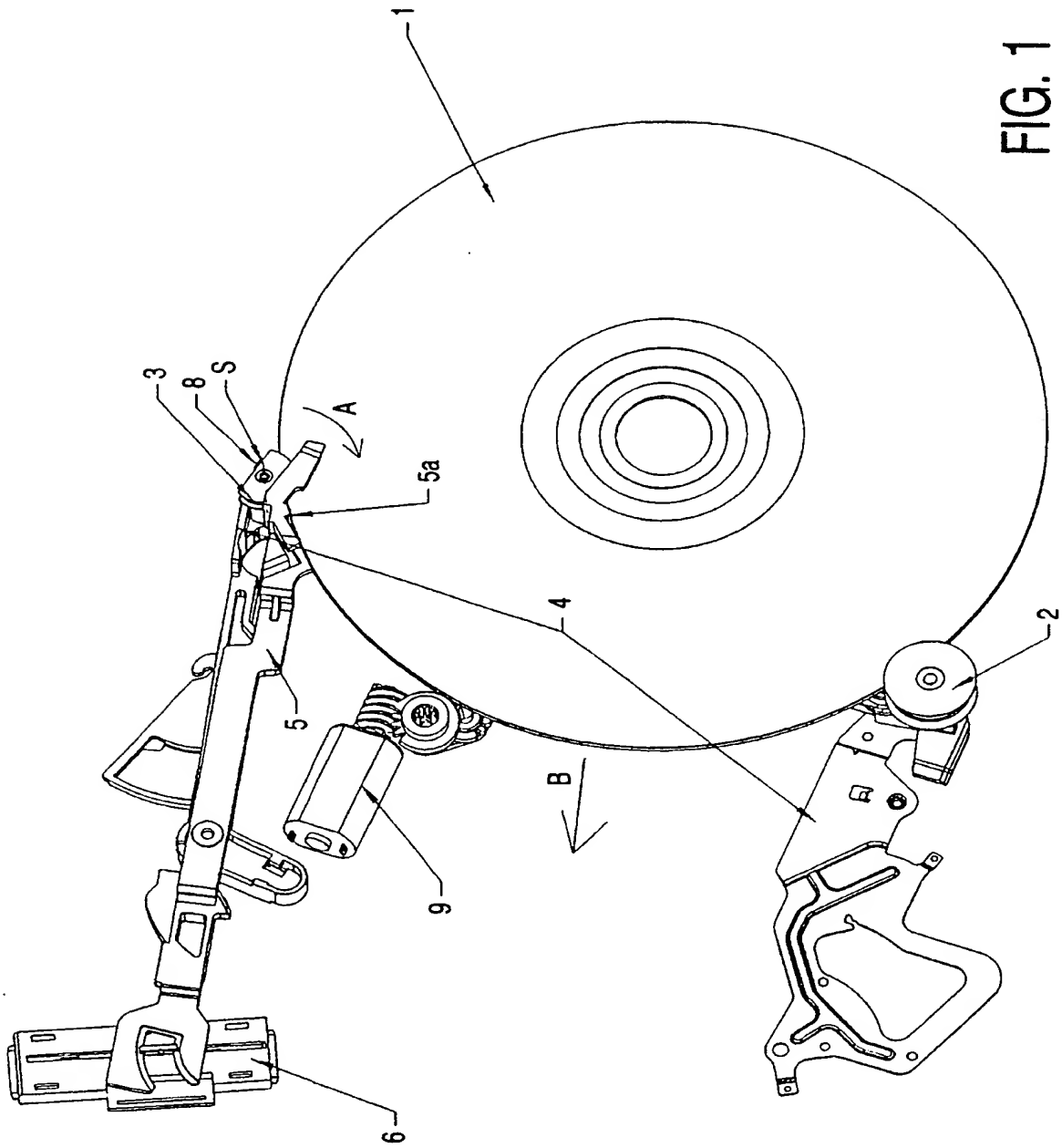

FIG. 1